MODULAR CAUSEWAY FERRY

(MCF)

LOGISTICS DEMONSTRATION PLAN

CONTRACT NUMBER: DAAK01-93-D-0007

CDRL ITEM A008

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0.0 REFERENCE DOCUMENTS

a. MIL-STD-831, Test Reports, Preparation of
b. DI-NDTI-80808, Test Plans/Procedures
c. ATCOM Technical Manual Verification Plan
d. Lake Shore Inc. Test Plans

1.0 INTRODUCTION

1.1 The objective of this Logistics Demonstration Plan is to present a detailed plan that includes verification plans for maintainability goals, the System Support Package, system safety, equipment publications, and training curriculum. This plan contains both Government and Lake Shore Incorporated plans and procedures demonstrating the logistic supportability of the Modular Causeway Ferry. The Logistics Demonstration Plan is prepared in accordance with the referenced documents.

1.2 Demonstration Item Configuration. A ready for duty First Article Test (FAT) MCF will be available for ~~our~~ contract demonstration. This will consist of one ready for duty Modular Causeway Ferry (MCF) consisting of one (1) powered section, two (2) intermediate non-powered sections, and one (1) beach/sea end module.

2.0 DEMONSTRATION SCHEDULE

2.1 A schedule for the Logistic Demonstration is contained in the matrix found in Annex A.

3.0 CALIBRATION REQUIREMENTS

3.1 Test equipment and instrumentation shall be calibrated IAW MIL-STD-4566A and LSI Quality Assurance Procedure QAP 8.1. All gauges and meters shall be tested and calibrated not more than 30 days prior to the demonstration.

4.0 DATA PROCESSING

4.1 LSI is to prepare a Logistics Demonstration Report to document the results of the Logistics Demonstration in accordance with DI-MISC-80809. The report to the Government, submitted within 30 days of the Logistics Demonstration, will include:

a. Demonstration article identification and a full description of demonstration specimens used, to include deviations from configurations specified in the LD Plan.

b. Statistical confidence calculations, when appropriate.

c. Results obtained include the following:.

1) Data collected.
2) Factors which influenced the data.
3) Analysis of the data.
4) Assessment of the qualitative factors.
5) Deficiencies.
6) Recommendations to correct deficiencies and for suggested improvements.

d. Overall conclusions/recommendations based on demonstration results evaluation.

e. List of faults introduced, the fault's diagnostic indicator, and the time to restore the system to operational status

5.0 SAFETY REQUIREMENTS

5.1 The following safety requirements are listed as recommended precautions that must be understood and applied to the assembly, operation, and maintenance of the MCF. Should a situation arise that is not covered in this paragraph or other supporting documents, the demonstration supervisor or Lake Shore Inc. (LSI) Engineering Integrated Logistics Support (ILS) should be contacted for direction or instructions.

5.2 General

5.2.1 Demonstration personnel shall observe all posted safety precautions.

5.2.2 Demonstration personnel shall dress accordingly for a safe work environment, including hardhat, safety shoes, safety glasses, and ear protection (machinery compartment). No loose clothing shall be worn.

5.2.3 Demonstration personnel shall read, understand, and follow the procedures documented for MCF assembly, repair, and operations.

5.2.4 Demonstration personnel shall verify that all power sources and operational controls have been secured during maintenance operations.

5.2.5 Demonstration personnel shall not make any unauthorized alterations to the MCF or test support equipment.

5.3 MCF Assembly

5.3.1 MCF assembly shall be performed by trained personnel using tools and procedures recommended or approved for the job.

5.3.2 When cleaning or working with solvents, the work area shall be well ventilated.

5.3.3 All electrical tools and equipment shall be properly grounded.

5.4 Powered Module Equipment and Maintenance

5.4.1 When working on the fuel system, provide adequate ventilation of the fuel compartment and surrounding deck. No open flames or heat sources shall be in the area. Clean up all spilled fuel and dispose of the waste (fuel) properly.

5.4.2 When working on the hydraulic system, provide adequate ventilation of the machinery compartment and surrounding deck. No open flames or heat sources shall be in the area. Clean up all spilled fluid and dispose the waste (fluid) of properly.

5.4.3 When working on the fire suppression system, wear safety goggles, and provide adequate ventilation of the machinery compartment.

5.4.4 When working on the electrical system, verify all power sources have been turned off and tagged.

5.4.5 When working on the diesel engine or engine components, precautions shall be taken to prevent personnel injury from burns from hot surfaces (exhaust system, engine block, engine heat exchanger, Z-Drive gearbox, thruster gear drive).

5.4.6 When working in the machinery space, and maintenance actions require equipment operation, precautions shall be taken to prevent personnel injury from exposed rotating equipment.

5.5 MCF In-Water Operations

5.5.1 Demonstration personnel shall dress accordingly for a safe work environment, including life jacket, hardhat, safety shoes, and safety glasses. No loose clothing shall be worn.

5.0 **SAFETY REQUIREMENTS (Continued)**

5.5.2 Do not operate the MCF in Sea States higher than 3 (3 foot average wave, 4.5 foot significant wave, 16 knot wind).

5.5.3 Under nominal operating conditions, engine speed shall not exceed 2100 rpm.

6.0 **FLOW DIAGRAM**

6.1 A flow digram illustrating the conduct of the Logistics Demonstration is referenced in Annex B. This shows the sequencing and interaction of major logistics support issues within the MCF program.

7.0 **DEMONSTRATION SUPPORT REQUIREMENTS**

7.1 Personnel Requirements. The following personnel are required for performance of the MCF Interoperability Test:

7.1.1 Contractor furnished personnel: Demonstration supervisor, MCF operators, MCF crew, test equipment technicians.

7.1.2 Government furnished personnel: Dock side personnel for mooring, fueling, and rigging.

7.2 Facilities and Test Equipment. Reference Annex C for facilities, support equipment, and test equipment that are required for performance of the MCF Interoperability Test (CFE = Contractor furnished equipment, GFE = Government/Customer furnished equipment).

8.0 **LOGISTICS DEMONSTRATION**

8.1 LSI will perform a Logistics Demonstration (LD) at Fort Eustis, VA, to identify any needed improvements to system supportability and reduced life-cycle cost. This entails the nondestructive disassembly and reassembly of the equipment using its related Testing, Measuring, and Diagnostic Equipment (TMDE), tools, and support equipment. The Logistics Demonstration is to be held after completion of First Article Testing and prior to delivery of prototype to Government ~~for their testing.~~

8.2 Major events of the Logistics Demonstration will include:

a. Evaluation of a preliminary Supply Support Package (SSP) contained in Annex E to include interface of TMDE, tools, and other support equipment.

b. Review design ensuring identification of operation and maintenance hazards, and confirm safety of selected procedures and tasks. Reference LSI TM Validation Plans in Annex F and Government TM Verification Plan in Annex G.

c. Review and validate draft equipment publications, including:

1) Confirm calibration procedures, maintenance tasks and repair/replacement procedures through the removal and replacement of selected component parts of the MCF, its TMDE and support equipment

2) Confirm and demonstrate operator and maintenance personnel tasks and skills for each maintenance level (UL/DS/GS).

3) Confirm maintenance time standards for maintenance functions through performance of selected tasks by properly trained military maintenance personnel.

4) Verify maintenance manpower/personnel requirements.

5) Verify training curriculum.

d. A listing of tasks to be demonstrated is referenced in Annex D. These were critical tasks identified in the training plans.

e. Demonstration conditions:

1) Principal operating modes, operating time, and cycling conditions to be imposed.

a) Mode of Operation: Dockside start up with measured mile maneuvering.

b) Operating Time: 4 hours per day for 9 days.

c) Cycling Conditions: Normal operation procedures.

2) Description of the demonstration facilities and instrumentation requirements, to include location are referenced in Annex C.

3) The mode of operation during the demonstration considering configuration and mission requirements is referenced in Annex H.

4) Demonstration constraints:

a) Manpower. Experienced pilot; recently familiar with trafficability of sea lanes between Ft. Eustis and Ft. Story, VA.

b) Test equipment. LSI will bring/ship internal portable equipment. LSI, if necessary, locate rental vendors on East Coast in the event it does not have that asset or in case a particular asset becomes inoperable.

f. The maintenance concept.

1) Operator - is authorized to perform Preventive Maintenance Checks and Services (PMCS) and report problems to the onboard watercraft engineer by using the DA Form 2404.

2) Unit Level - the unit level is authorized to remove and replace minor components.

3) Direct Support/General Support - the direct support and general support levels are authorized to remove, replace, and repair major components.

g. Expected results of the Logistics Demonstration are:

1) Validation of the LSA Control Number (LCN) structure and the Provisioning Parts List (PPL).

2) Validation of the Maintenance Allocation Chart (MAC).

3) Data expected from each test along with the recording methodology and definition of LSA data to be collected.

4) Analytical methods and calculation procedures to be used to analyze demonstration data for Operator's Manual, Repair Manuals, Lubrication Order, and Logistic Support Analysis Reports.

5) The criteria for classifying demonstration results as successes or failures. Definition of failure in to expected symptoms which will be observed by operators and maintenance personnel. It is demonstrated by focused reviews of the Maintenance Allocation Chart(s) and Training Plans.

8.0 LOGISTICS DEMONSTRATION (Continued)

h. The plan of action to be used when demonstration failures occur is that if the failure is not a "Mission Stopper", we go around it and continue as long as it does not effect the other parts of the demonstration. If it becomes a miision stopper, provisions will be made to make on the spot corrections or a daily review, where recorded minutes, with suspense dates will be made to submit corrections. If possible, the failure will be overcame and then re-demonstrated during the course of the Logistics Demonstration period.

i. LSI to perform all work necessary to develop, fabricate and deliver a Supply Support Package (SSP) necessary to conduct the LD. The SSP is a composite of the support resources that will be evaluated during the LD and tested and evaluated during the IOTE. These requirements are similiar to those expections of the FAT and Refurbishment documents.